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78C. CAMBRIDGE, U.S.A. Harvard University [Carpenter Center for the Visual Arts].

FORM FROM PROCESS — THE THONET CHAIR

Exhibitions which present form as the result of a process and encourage a fresh look at familiar things, play a vital rôle in Harvard's program of Visual Studies. The present exhibition is devoted to one of the most familiar objects in our daily visual environment: the chair. We use it continually and we may have strong feelings about it but we rarely pause to see it as a response to particular cultural, technological, economic and social conditions. Yet this is how we should view the chairs which Michael Thonet and his successors designed, chairs which survive among the very few creations of the nineteenth century that appealed and continue to appeal to outstanding designers and ordinary consumers alike.

FORM FROM PROCESS - THE THONET CHAIR

An exhibition of

historic bentwood furniture from the collection of John Sailer, Vienna.

Catalogue and research by Hans H. Buchwald.

Design and graphic treatment by Toshihiro Katayama.

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Carpenter Center for the Visual Arts, Harvard University,
Cambridge, Massachusetts, Fall and Winter 1967

PREFACE

Exhibitions which present form as the result
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economic and social conditions. Yet this is how
we should view the chairs
Michael Thonet and his successors produced by means
of methods that were entirely new
and truly industrial.
As a consequence of industrial mass production,
chairs which are expensive collector's items today
were sold originally at prices that brought them within
the reach of a wide range of people
who could not have afforded expensive furniture.
No wonder
that to designers of later generations Thonet's chairs

'became something like symbols of the positive potential of industrialization. To historians they certainly can recall a most momentous period; there must be many instances when events that in retrospect appear as revolutionary, were initiated in discussions around a table in a coffeehouse or a backroom, where most participants were seated in Thonet chairs. Many paintings from the period in question either show Thonet chairs or incorporate elements that make it clear how strongly these chairs had become absorbed in the artistic imagery of an entire generation.

It seems particularly appropriate that this exhibition should happen at a time when, for the first time since its inception, the program of studies at the Carpenter Center for the Visual Arts includes a course "Form from Technology", an indication of growing awareness of university responsibility towards the shaping of the visual environment in all its aspects. This exhibition is not a disinterested

display of attractive objects but an invitation
to consider whether from a contemplation of highly
successful industrial products
of the past some lesson might not be drawn
for present and future.

It is also an invitation to consider how much can be
learned from an investigation
of form
if a genuine attempt is made to analyze it fully:
it is fascinating to discover how many factors had
to come together to permit
a completely satisfactory solution of a problem that
on the surface seemed so deceptively simple --
bending a piece of wood into a permanent shape.
No amount
of purely formalistic interpretation could have
accounted properly for shapes
that can only be understood by thinking in terms
of process and context.

We are greatly indebted
to all those who have done previous research about,
and exhibitions of Thonet furniture and, above all,
to Mr. John Sailer of Vienna;

LIBRARY
L 1305/71.
14 4 1971.

By very kindly putting his collection of Thonet chairs at the disposal of the Carpenter Center for the Visual Arts, he gave us the opportunity to try to reveal both the beauty of these chairs and the conditions which led to their design.

We are also extremely grateful to a number of other individuals and institutions who have helped us through the loan of material and by providing important information:

Mr. Frank H. Burgham,
Thonet Industries, Inc., New York, N.Y.

Mr. Gunther Eberle,
Thonet Industries, Inc., Statesville, N.C.

Mr. Eugene B. Halward,
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The Museum of the Chair, Holesov, Czechoslovakia

Miss Victoria Talos, Vienna, Austria

Mr. Benjamin Thompson,
D/R International, Inc., Cambridge, Mass.

Thonet Industries, Inc., New York, N.Y. assisted in the publication of this catalogue through a generous grant.

The initiative for the present exhibition came from Dr. Hans Buchwald who also conducted the research, organized the material and wrote the catalogue.

He was assisted by the exhibition staff of the Carpenter Center, Mr. Davis Pratt, Mrs. Jael Nathan, Mr. Todd Stuart (photography) and by Miss Saundra Bailey, Mr. Moritz O. Bergmeyer, Miss Phyllis Hattis, Mr. H. Randolph Lewis and Miss Tova Solo.

Design and graphic treatment were the responsibility of Mr. Toshihiro Katayama.

To all of these the Carpenter Center for the Visual Arts owes a real debt of gratitude.

Eduard F. Sekler

Director

MICHAEL THONET - REMARKS BY A COLLECTOR

The reader of the following pages will receive
a rich amount of scholarly data
about the bentwood chair, its history, function,
material and design.
So let me as dilettante and art collector
stray from a predominantly objective
and scientific approach
to consider some aspects
of Michael Thonet's life and personality.
It was the biographical material
that I came across by chance some years ago
as well as the ingenuity and beauty
of the design of the Thonet chairs
which drew my attention to Michael Thonet
and prompted me to collect bentwood furniture.
What made Michael Thonet so remarkable was
the multitude of his talents.
He was a creative craftsman,
inventor, architect, large scale entrepreneur and
one of the first industrial designers.

Any one of these talents
would have justified his fame.
As a young cabinetmaker in a small German town
on the Rhine in the early 1830's,
he invented a new method of making furniture
which gave him the freedom to create new designs.
This achievement alone would rank him
among the famous cabinetmakers and artists
of the history of furniture.

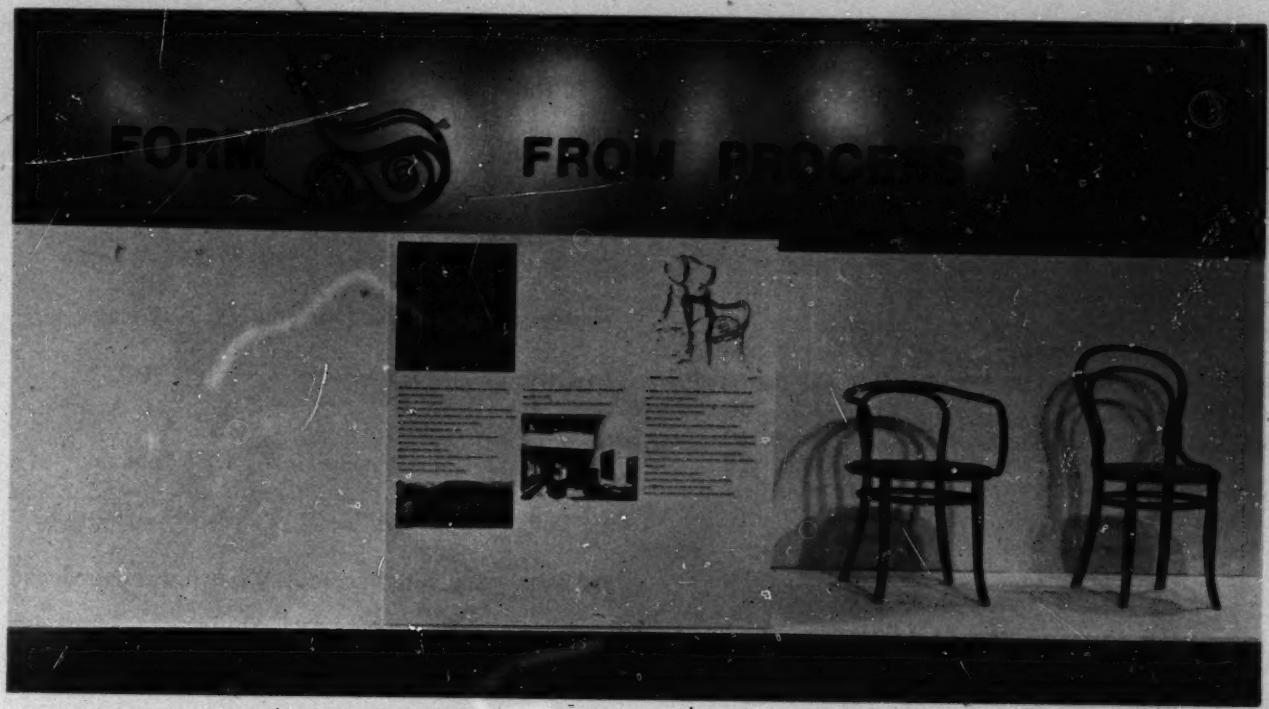
In 1841 the Austrian Chancellor Clemens Metternich,
known mostly for his role at the Congress of Vienna,
on a trip to Germany
came upon some furniture by Thonet.
The Chancellor was so impressed that he asked
Thonet to his residence at Johannisberg
in the Rhineland. There Metternich persuaded
the cabinetmaker to go to Vienna
and even arranged a free ride for him
on the diplomatic courier carriage.

In Vienna Thonet very soon gained recognition
and was employed to make furniture

for the high nobility and the Imperial Court.
To almost any cabinetmaker of the time
this would have been the extreme fulfillment
of possible ambitions.
Yet Thonet declined to restrict
his career to that of
"furniture maker by appointment to the Court".
Instead of making custom built furniture
for a limited and privileged few,
he pursued an old idea of his to mass-produce
furniture for the general public.
It seems he forsaw a time
in which the majority of the people
would demand and be able to afford inexpensive
and well designed furniture.

Successful sales proved him to be correct.
In 1856 he was ready to build his first factory.
Instead of employing architects and engineers
he drafted the plans for the factory and
designed the machines himself.
Aware of economic factors, he located the enterprise
in the forests of Moravia, where the necessary
beechwood was inexpensive and
unskilled labor abundant; the new process had made
skilled cabinetmakers unnecessary.
Moreover, he seems to have recognized
already at this early stage of industrialization
that it is not enough
to mass-produce a given item in its existing form,
but that the mechanization
of the manufacturing process
should influence the design of the object
while the shape of the product should determine
the form of production.
It is in this respect
that one can speak of Michael Thonet
as one of the very first industrial designers.
That some of his creations
were still deemed the best
and most progressively designed furniture
some fifty years later
by famous architects such as Le Corbusier
and that we still today appreciate the intelligence
and beauty of his furniture
makes Michael Thonet all the more remarkable.

John Sailer



The chairs which were designed by Michael Thonet a century or more ago are among the most convincing demonstrations that form is the result of a process. They were the product of a direct and brilliant response to specific formal considerations and to a set of particular cultural, technological, economic and social conditions. So great was their perfection that they were among the very few creations of the 19th century which appealed even to some of the most outstanding and uncompromising pioneers of the Modern Movement in Architecture.

For instance, when the Austrian architect Adolf Loos designed the interior of the Viennese coffee house Café Museum in 1899, a chair design introduced by Michael Thonet no later than 1859 became one of its major features. It is perhaps even more surprising that a chair produced by Thonet since 1870 was chosen in 1925 by Le Corbusier for the interior of his Pavillon de l'Esprit Nouveau.

In contrast to many furniture designs of the more recent past Thonet chairs were not bought exclusively by "design initiates". The firm of Thonet is reputed to have sold 30,000,000 chairs of a type very similar to that used in the Café Museum by 1920, while twenty-six other firms produced 12,000 chairs per day in imitation of Thonet designs by 1900.

Moreover, the chair models chosen by Loos and Le Corbusier are still being produced in quantity by the same manufacturing process which was introduced by Michael Thonet.

The beauty of the Thonet chairs speaks for itself today as it did decades ago to architects and the countless millions who used them daily. But today, when we are required to seek new design solutions to answer the problems of an ever-changing technology, it is not enough to enjoy their forms; we must attempt to gain an insight into the conditions which led to their creation and to their universal and lasting acceptance.

DRAWING OF TWO THONET CHAIRS

Le Corbusier, date unknown
Private Collection

The chair is an object with a highly specialized function. Many positions of rest cannot be achieved in it, and a single chair is usually comfortable only for a limited number of sitting positions.

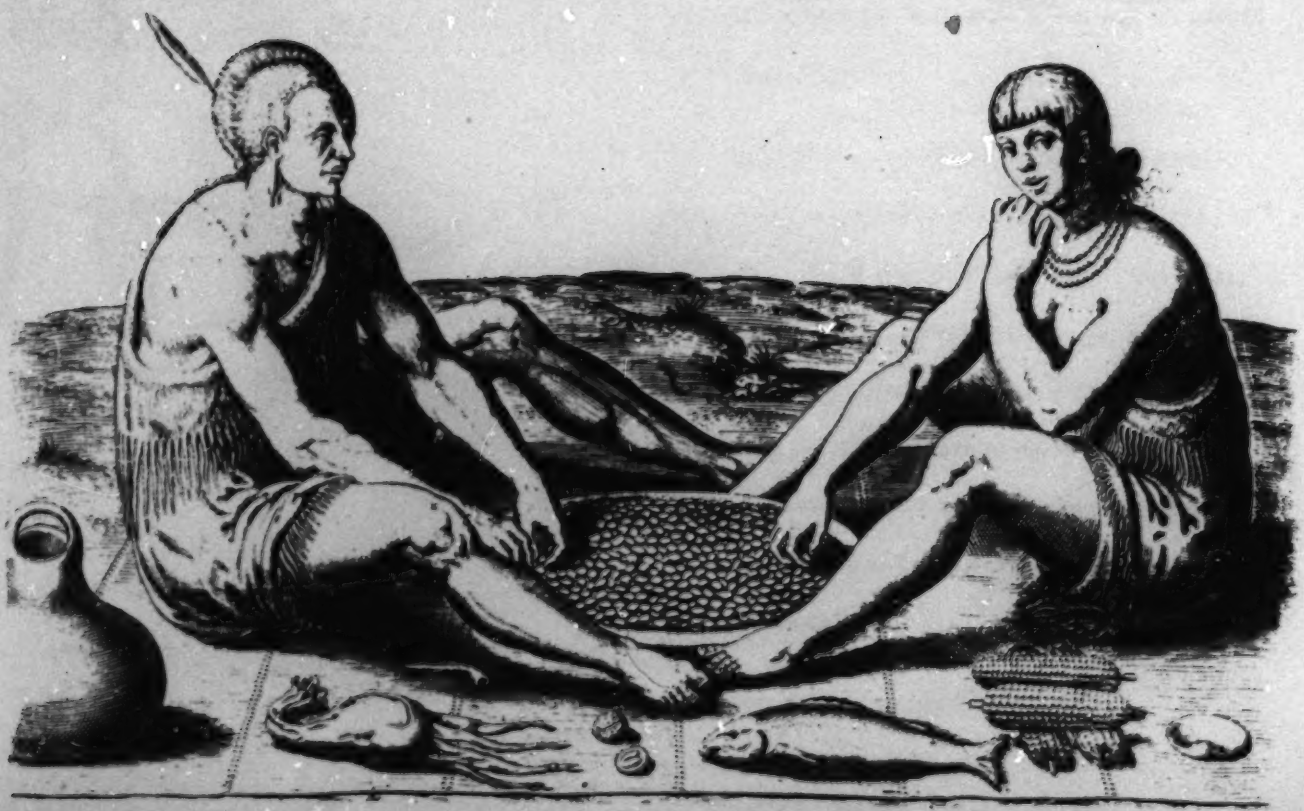
STATUETTE OF A HARPIST

Marble
Cycladic, 3rd Millennium B.C.
Athens, National Museum

Chairs were not commonly used by most people of the world before the spread of European customs in the 18th and 19th centuries.

"WASERLEY WEISE SIE ESSEN PFLEGEN"

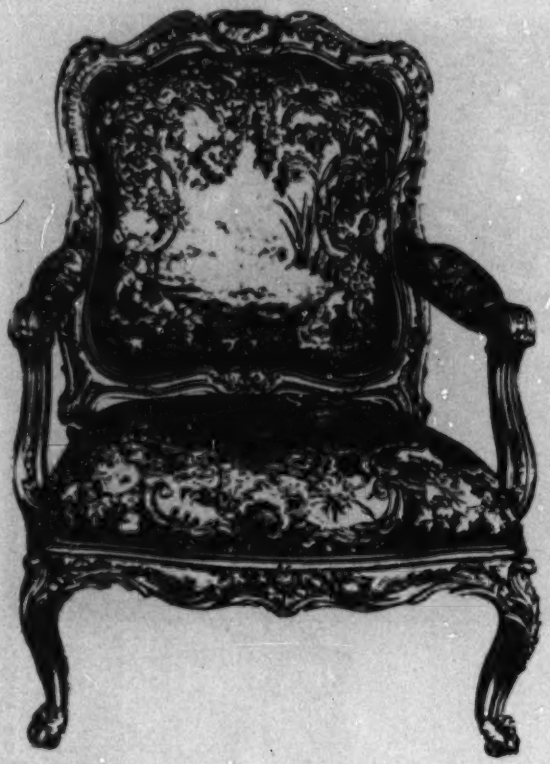
Engraving
Theodor de Bry
From Grands Voyages, Virginia,
Frankfort on the Main, 1600, Pl. XVI



A continuous, if occasionally not very clear line of development in the design of chairs begins in Ancient Mesopotamia and Egypt. Early examples seem often to have been reserved for ceremonial uses. The development is marked by countless variations which are often imaginative, excellently worked, and beautiful, but by few true innovations.

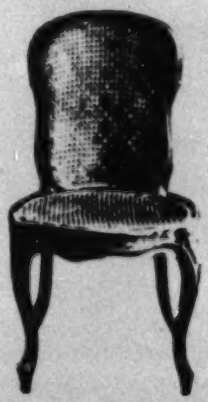
SCHOOL SCENE: TEACHER AND STUDENTS ARE SEATED ON CATHEDRAS

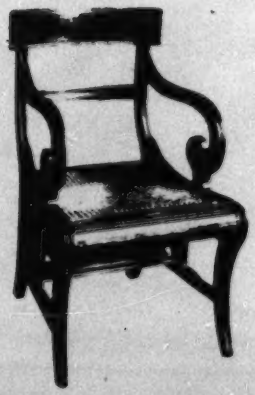
Stone relief
From Neumagen, W. Germany, late 2nd century A.D.
Trier, Rheinisches Landesmuseum



A high degree of perfection in the design of chairs was achieved in the 18th century. The unifying power of the curved line was exploited to form a completely integrated composition in which the individual structural members were no longer clearly distinguished. While designers in London and Paris were responsible for major innovations, workshops in other centers of production such as Venice, Dresden, and the Rhineland created imaginative variations.

Although chair designs were simplified in the late 18th and early 19th century, curved forms reminiscent of those common in the middle of the 18th century continued to be used.





In all periods chairs were designed in keeping with a set of attitudes about form which reflected the prevailing historical conditions. The articulation of chairs was often strongly influenced by the current architectural vocabulary.

1 ARMCHAIR MADE FOR KING LOUIS XV

Carved and gilded wood; tapestry
signed Folliot
Paris or vicinity, mid-18th century
Charles Wertheimer Collection

2 "CABRIOLET" CHAIR

Carved wood; cane
Paris, about 1760
Paris, Guerin Collection

3 ARMCHAIR

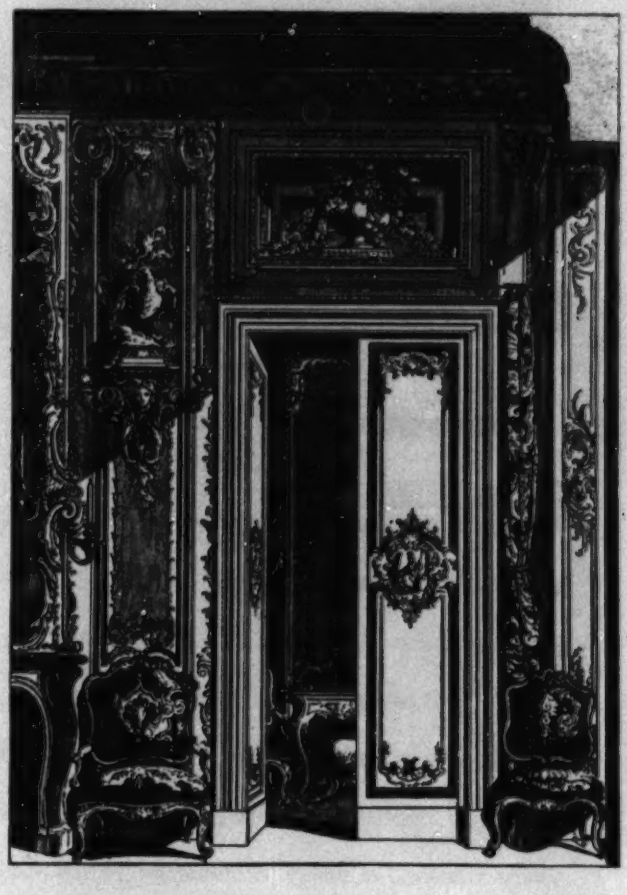
Carved and gilded wood; ivory; tapestry
Northern Italy, about 1780
Milan, Civici Musei del Castello Sforzesco

4 LIBRARY ARMCHAIR
CONVERTIBLE INTO A SMALL STAIRCASE

Carved mahogany; cane
Paris, about 1816
Paris, Private Collection

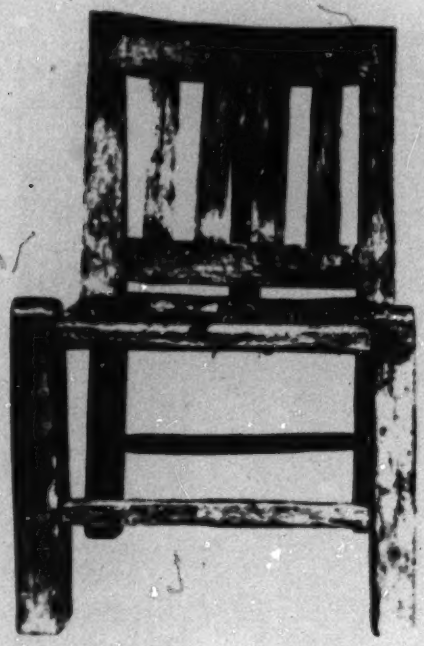
5 CHAIR

Carved wood; upholstery
Vienna, 1820-1830
Vienna, Museum of Applied Art



DESIGN OF AN INTERIOR
FOR LA BARONNE DE BEZENVAL

Engraving
J. A. Meissonnier
Paris, ca. 1735



Wood is the material out of which chairs were most frequently made; it is already used in the earliest surviving examples. Its major advantages are its light weight in comparison with other materials and the ease with which it may be worked.

CHAIR

Wood and plaited cords
Egypt, 2nd half of 2nd Millenium B.C.
London, British Museum

for illustrations see opposite page

1 18TH CENTURY CARPENTER'S TOOLS

From Diderot, Encyclopédie ou Dictionnaire Raisonné, etc. Recueil de Planches II, Charpente, Pl. I
Paris, 1763

2 18TH CENTURY TOOLS

From D. Johann Kruenitz
Oeconomische Encyklopaedie, etc.
Bruenn, (Brno) 1789

3 18TH CENTURY CARPENTER'S TOOLS

From Diderot, Encyclopédie ou Dictionnaire Raisonné, etc. Recueil de Planches II, Charpente, Pl. I
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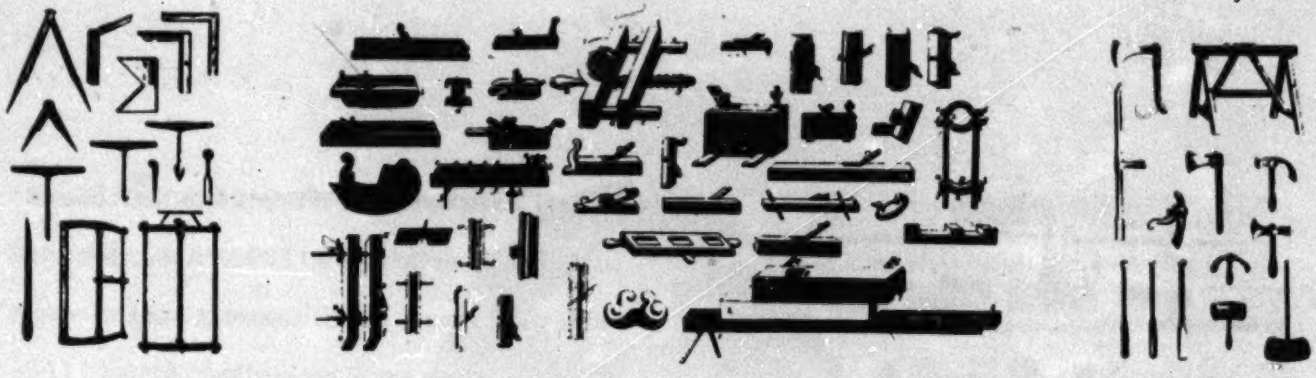
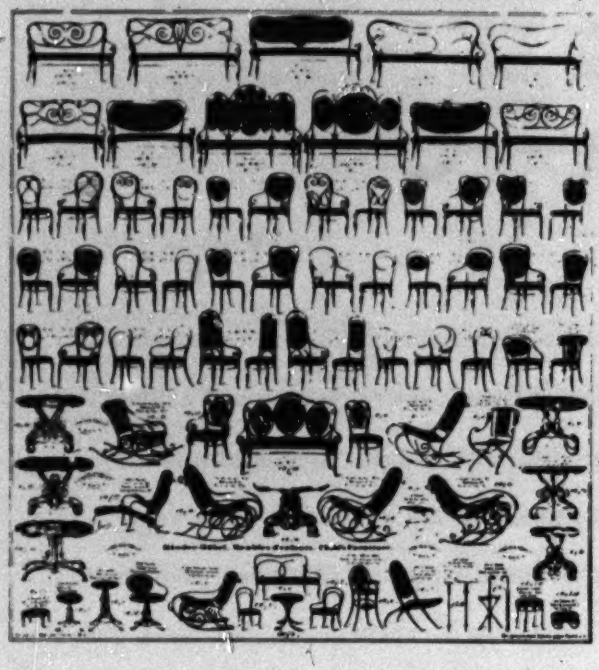


Before the industrial revolution the construction of wooden chairs required the extremely skillful use of relatively simple tools. In a long period of apprenticeship the craftsman acquired the accumulated experience of previous generations. The tradition of craftsmanship, fostered by the trade guilds, remained unbroken in Central Europe from the Middle Ages to the 19th century.

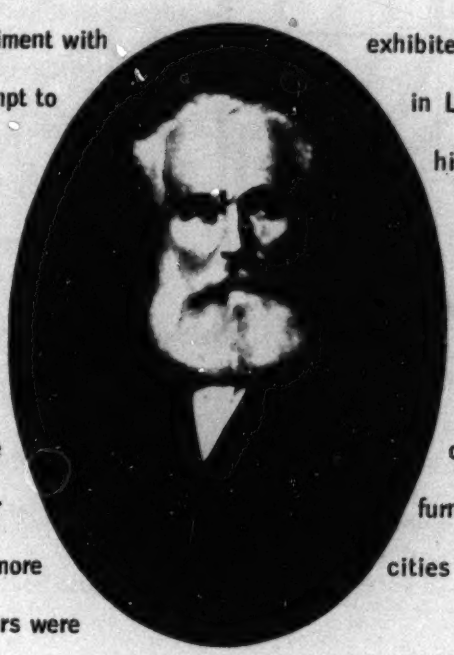
THE JOINER IN HIS WORKSHOP

Woodcut
Jost Amman
From Hans Sachs, Die Staends
Frankfort on the Main, 1568

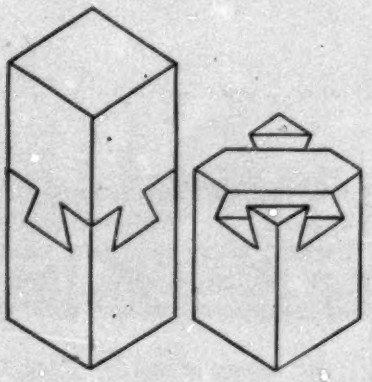


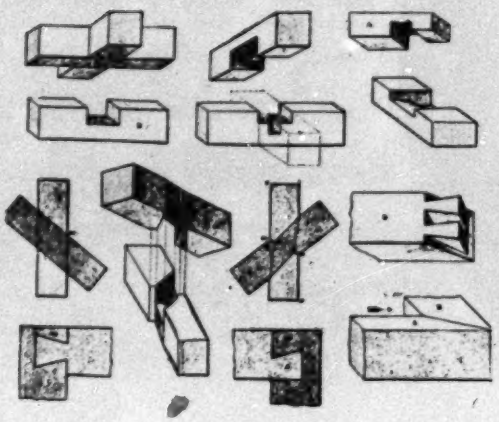
Michael Thonet was born in Boppard, a small town on the Rhine, on October 2, 1796. Although his father was a tanner, he was apprenticed to a carpenter. At the age of twenty-three, having achieved the status of "Master Carpenter", he opened his own small shop. He specialized in the construction of the household furniture required by the townspeople of the surrounding countryside. Because he worked conscientiously and economically his furniture was in demand by the thrifty inhabitants of the nearby towns.

After 1830 Thonet began to experiment with woodworking techniques in an attempt to economize labor and material. In 1841 he received patents for new methods of using wood in England, France and Belgium. In the same year Prince Metternich, Chancellor of Austria, persuaded him to move to Vienna, where opportunities for exploiting his invention would be more favorable. In 1851 Thonet's chairs were



exhibited at the First International Exhibition in London, where they were awarded the highest prize for an industrial product. the bronze medal. At the time of his death in 1871 Thonet's firm, which had been transferred to his five sons already in 1853, consisted of four large factories as well as furniture showrooms in a number of major cities throughout the world.

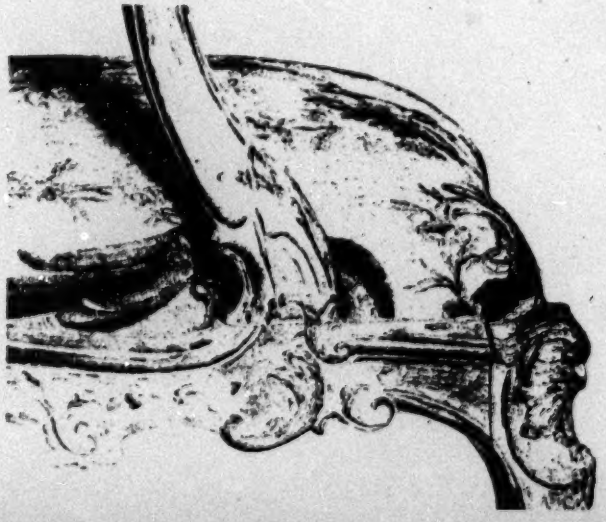




Thonet's experiments were a response to limitations in current methods of working with wood.

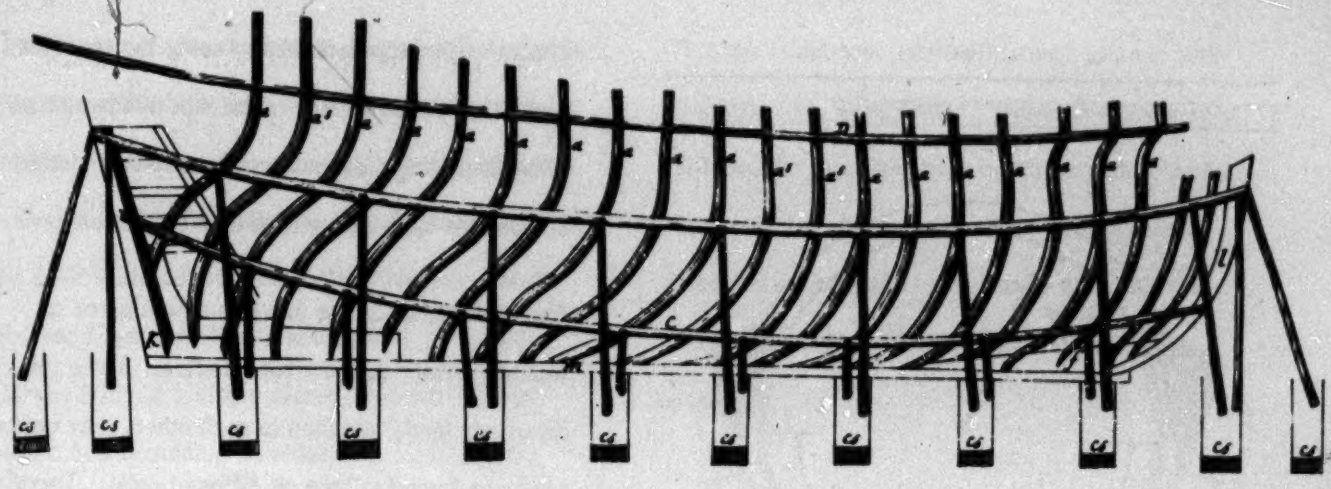
Because wood is composed of long straight fibers it is most effectively used in long straight members. If a form which was not straight was required it was usually obtained by joining two pieces of wood or by cutting the desired shape out of a single piece.

Neither method entirely satisfied Thonet. Both methods were very time consuming; the joint seldom retained its rigidity permanently; a piece of wood cut into an irregular shape tended to split along the fibers.



DETAIL OF A CHAIR SHOWING TYPICAL JOINTS AND CRACKING ALONG GRAIN

Carved and gilded wood, tapestry
France, mid-18th century
Paris, Musée des Arts Decoratifs



THE RIBS OF A SHIP DURING CONSTRUCTION

From W.Sutherland,
The Ship-Builder's Assistant,
London, 1711, p. 27, Fig. B

Thonet sought a solution which would avoid joints and complicated cutting as much as possible by using wooden members bent into curved shapes.

The limited bending of wood presented no obstacle in Thonet's time. After the proper application of heat and water the piece of wood was either fixed to a frame which held it in place or dried in a form which permanently reshaped it.

While such methods were useful in the construction of ships or carriages, they were not generally used in the construction of chairs because the wood could not be bent sufficiently.

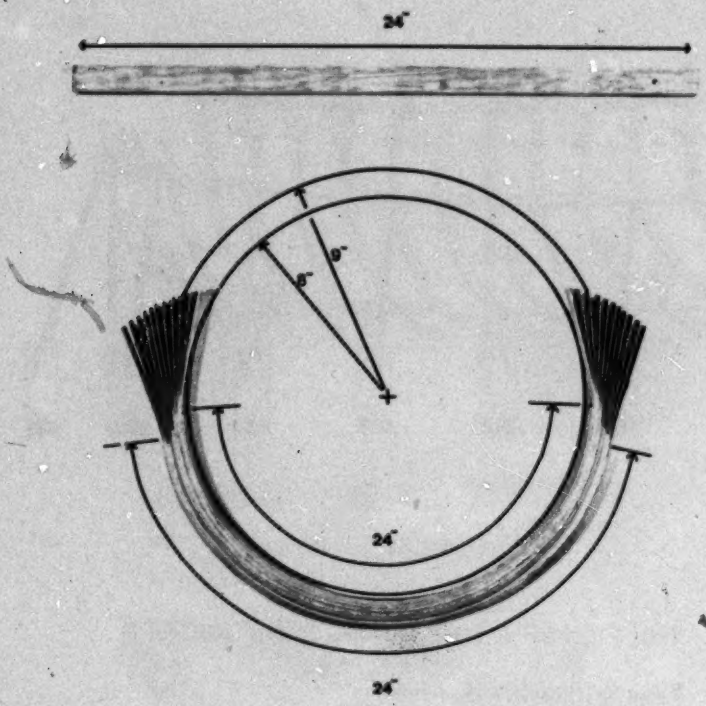
for illustrations see opposite page

1 WOODEN JOINT

From H.W.Holly, Carpenter's and Joiner's Hand-book
New York - London, 1900, Fig. 32

2 WOODEN JOINTS

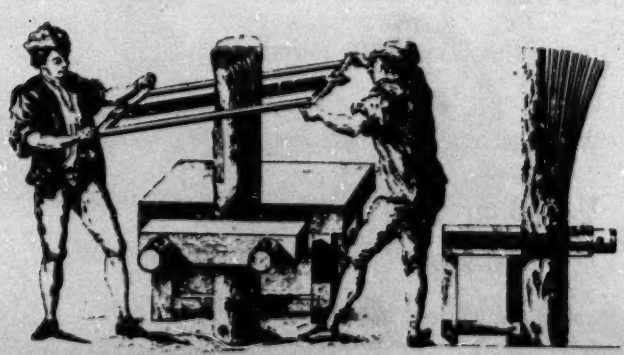
From J.A.Adhémar, Cours de Mathematiques
Paris, 1849



Thonet's first approach was to apply the customary methods of bending wood to the thin wooden strips traditionally used as veneers because thin pieces of wood are more easily bent than thicker pieces.

The inner radius of the curve in a bent piece of wood is greater than the outer radius. Since the fibers are firmly attached to each other, they cannot easily be forced to take on different radii. Therefore, other factors being equal, the greater the difference between the inner and the outer radius (i.e. the greater the thickness of the piece of wood) the more difficult it is to bend the piece.

By the same reasoning, if several thin strips of wood are bent into the shape of a curve and then firmly attached to each other, they will retain their bent shape.



The unusually graceful curves Thonet obtained with his new method met with the immediate approval of his customers. Nevertheless, Thonet was not completely satisfied because the thin strips of wood he used could not be bent in the direction of their thicker dimension; they could be bent only into curves lying in a single plane. The applicability of the new technique was therefore very limited.

At first Thonet overcame the limitation by applying his method to the same member a second time. Thin wooden strips were tied together, boiled in glue, bent into a wooden frame, and allowed to dry. The member thus obtained was then cut into thin strips perpendicular to those of which it was composed. The new strips were now bent in a direction perpendicular to that of the initial bend and glued together, forming a solid member of almost any desired curved shape.

WORKMEN SAWING A LOG INTO VENEER

From R.W.Symonds, Furniture Making in Seventeenth and Eighteenth Century England London, 1955, Fig. 153

The new technique, while effective, was too time consuming and complicated. Thonet therefore soon replaced the thin flat strips by strips with a square cross-section, for these could be bent in either direction immediately. He thereby combined the two phases of his second method into a single process.

Even the simplified version of Thonet's second technique proved to be too time consuming to be applied economically.

Thonet returned to observations he had made during his first experiments. When a thin flat wooden strip was twisted, its flat side, and accordingly its smaller dimension, faced a somewhat different direction at every point. The twisted strip could therefore be bent in many directions, depending only upon the amount of twist.

By gluing together a number of twisted bent strips a solid member of almost any desired curved shape could be obtained.

Usually the wood was twisted only enough to obtain the required bend, and then rasped to give it a round or oval cross-section. The individual pieces of the chair were then attached to each other with glue, screws, or a very simple joint.

Many advantages of Thonet's chairs were already recognized in 1842 in an official report on the industrial fair at Mainz. They included "complete permanence and elegance in spite of extreme lightness...comfortable elasticity...reduction of labor and material...the use of wood in keeping with its natural growth."

Once a chair had been designed and the required forms made, its individual parts could be mass-produced by unskilled or semi-skilled workmen. The resulting reduction in cost allowed Thonet to sell his chairs at prices far below those of chairs made with traditional methods. Sturdy and attractive chairs therefore became available to many who could otherwise not have afforded them.

Constantly increasing sales enabled Thonet to build his first large factory in 1856. In contrast to the earlier furniture workshops, which were located in the population centers they supplied, the new factory was located in a small village in Moravia, where wood and unskilled labor were abundant.

The new location was possible only because the chairs were ideally suited for transportion in quantity on the expanding railroads. They were light, their individual parts could be crated compactly without danger of breaking, and they could easily be assembled by semi-skilled workmen at their destination.

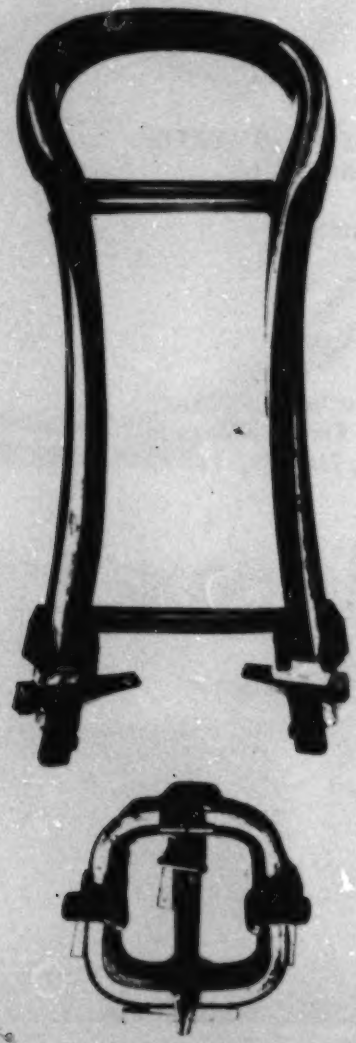
1 THONET FACTORY IN WSETIN MORAVIA, BUILT 1868

Opaque Watercolor (?)
Artist unknown

2 TIMBER CUTTING

From D. Johann Georg Kruenitz
Oeconomische Encyklopaedie, etc.
Bruenn (Brno), Moravia, 1789, Pl. XXIV

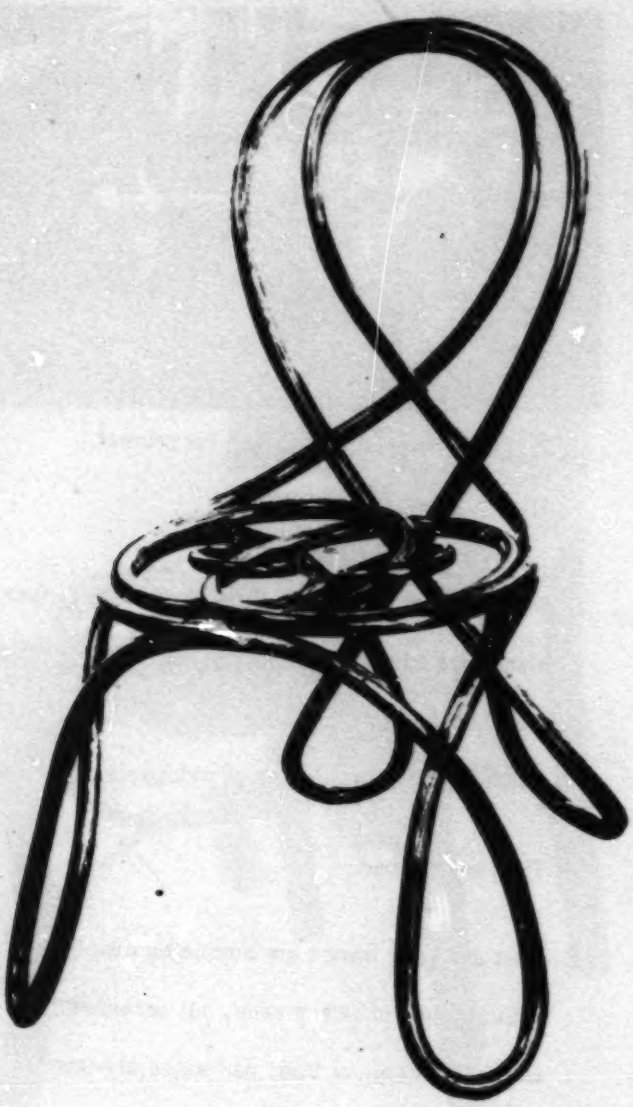
When markets expanded to North and South America in the middle of the 1850's, Thonet found that the glue used to laminate the wooden strips tended to dissolve in a hot, wet climate or in the damp hold of a ship. He therefore continued his search for new methods.



If the laminated strips could be replaced by solid pieces of bent wood, not only could the use of glue be entirely eliminated, but production could also be simplified and costs still further reduced.

When a piece of wood was bent, its inner fibers were compressed while its outer fibers were stretched. When it was bent too far, the outer fibers broke first, indicating that if stretching the fibers could be avoided, it would be possible to bend relatively thick pieces of solid wood without breaking them.

After a long period of experimentation a solution was finally found. A metal strap was so firmly attached with clamps to one side and both ends of a piece of steamed wood, that wood and metal behaved as a single member. They were then bent together in a single operation, the wood on the inside and the metal on the outside of the bend, thereby stretching the metal strap instead of the wooden member. Because the metal strap would stretch only very slightly, and because it was much stronger than the wooden fibers, it forced all of the fibers to compress.



Any desired bend could be achieved by the manipulation and proliferation of metal straps.

EXHIBITION CHAIR MADE OF TWO PIECES OF BENT WOOD

Thonet Brothers, after 1859
Holesov, Czechoslovakia, Museum of the Chair

The Production of a Thonet Chair
in the Late 19th Century

1 The trunk of a red beech tree is sawn into pieces of required lengths and widths. Red beech is used because of its ready availability in many parts of Eastern Europe and because its wood is relatively pliable, free of knots, and composed of straight, relatively thin fibers.

2 These pieces are turned on a lathe which is keyed to various thicknesses if necessary.

3 They are steamed one to two hours, depending upon their thickness, to make them more pliable.

4 After clamping on the steel straps, the wood is bent, together with the strap, by hand or by machine and is forced into a cast-iron form; three men bend an average of twenty-five back-pieces in one hour.

5 The piece is dried in the form for several days in a heated room.

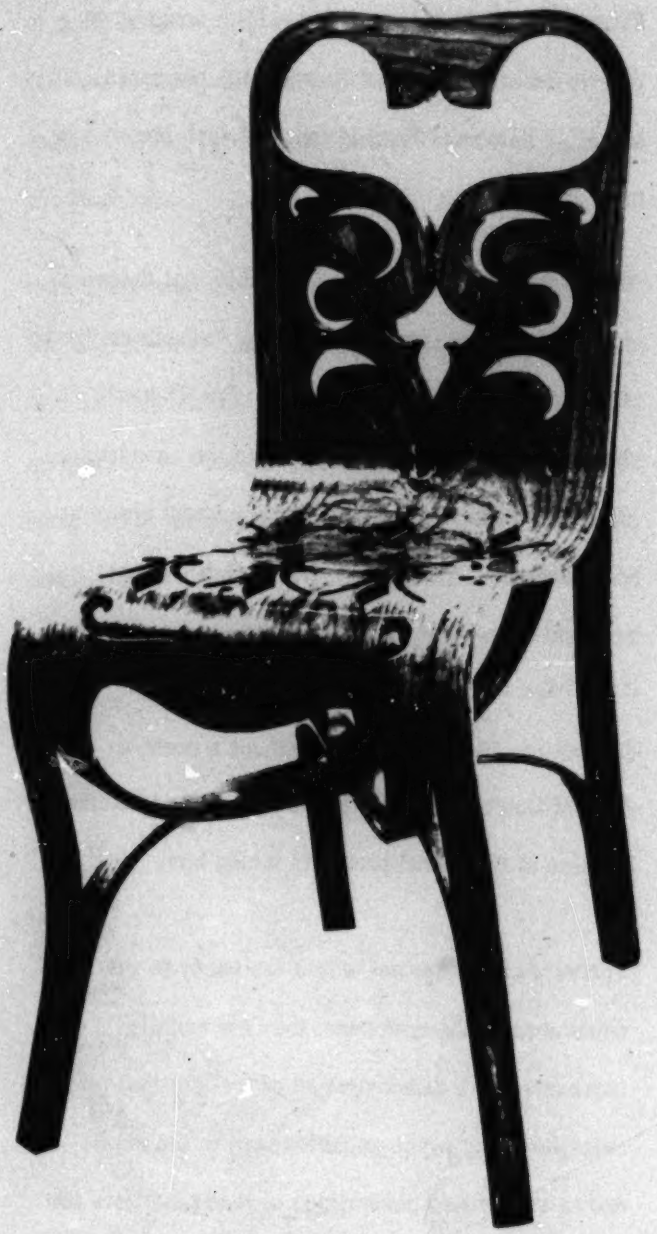
6 After removal of clamps, straps, and forms, the pieces are trimmed or modified, depending upon their position in the chair. They are then finished with a rasp, file, or sandpaper.

7 They are stained.

8 Seat and back frames are completed usually with a filling of woven cane, but occasionally with upholstery, or thin, perforated ply-wood.

9 The parts are assembled; if they are to be exported, they are usually assembled after reaching their destination.

10 The chair is given a final polish.



Even after the problems of production had been resolved, Michael Thonet and his five sons continued to experiment with new methods of constructing chairs. Among the most surprising forms which grew out of their experiments were those which were produced by carefully cutting, bending, and laminating large wooden sheets. While these chairs were light, graceful and extremely sturdy, they could not be mass-produced economically.

CHAIR

Large sheets of bent and laminated wood
Thonet brothers, perhaps 1880's
Vienna, Technisches Museum

Thonet's achievements must be viewed in the perspective of the 19th century, a period of remarkable men and of enormous change. Thonet was not the only one to invent new processes and to take the giant step from craftsman to industrialist. Nor were his chairs the only household objects which were mass-produced, inexpensive, practical, well-made, and bought by almost everyone. While at first glance it is surprising that he should have created designs of such dramatic simplicity in an age so fond of ostentation, perhaps it would be more surprising yet, if such forms did not exist in an age so firmly rooted in rationalist ideas. What makes Thonet exceptional, even for the 19th century, is that he not only combined so many achievements, but while doing so, created forms of such beauty and nobility.

On the surface it may seem remarkable that these chairs should have been designed by "simple craftsmen" like Michael Thonet and his sons. But Thonet's chairs themselves are a testimony to the enormous importance of a direct and personal contact between the artifact and its creator. Although his almost medieval training as a master craftsman may not in itself have led Thonet to create forms of such distinction, his training was without a doubt a precondition to the mastery not only of the technical but also of the formal problems facing him.

Thonet's chairs are not only a testimony to the importance of the craftsman; they are equally impressive as a demonstration of the fact that beautiful forms which appealed both to the public and to successive generations of leading artists can be mass-produced. In taking his enormous step from craftsman to industrialist Thonet, most probably unwittingly, disproved the romantic precepts

of such 19th century theorists as John Ruskin and William Morris, who praised the value of the craftsman, but for the most part to the exclusion of the machine.

It is this combination of craftsmanship with talent, and with an unromantic willingness to accept new methods, a combination which was not fully recognized in a teaching curriculum until the inception of the Bauhaus some 50 years after Thonet's death, which makes Thonet significant to us, and not merely an interesting figure out of history.

1 PICASSO IN HIS STUDIO

Photograph
André Villers
from Jacques Prévert, "Portraits de Picasso,"
Milan, no date

2 WOMAN IN A THONET ROCKING CHAIR

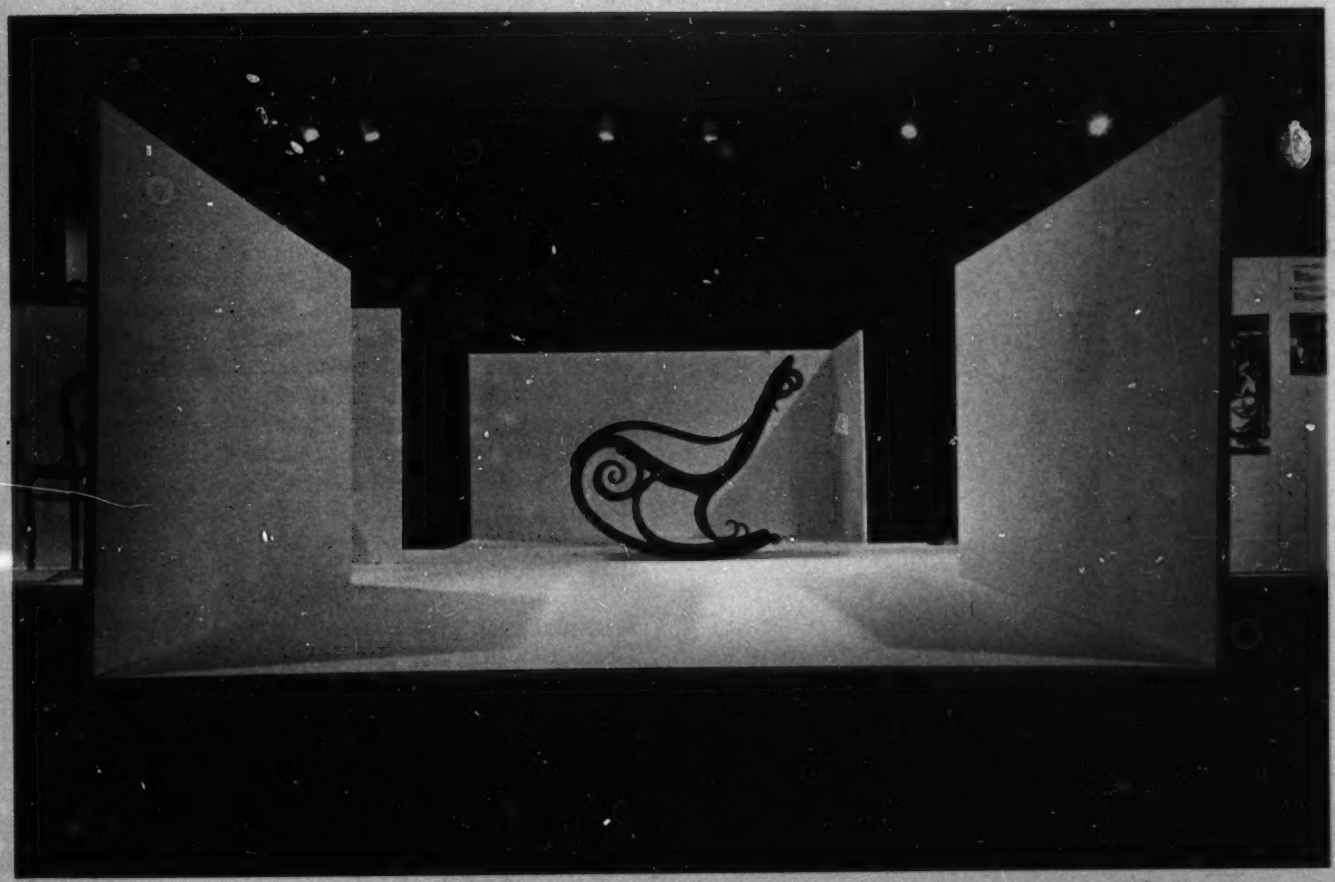
Charcoal and pencil drawing
Auguste Renoir,
Chicago, Art Institute
France, about 1883

CATALOGUE OF EXHIBITS

All objects are from the John Sailer collection unless otherwise noted.

Bibliographical indications in this list of exhibits refer to the bibliography at the end of the catalogue.

All dimensions are approximated to the nearest 1/8".



1 CHAIR MADE IN BOPPARD OR VIENNA, 1840-1843

Thonet's new methods of bending wood have already dramatically changed the details and proportions.

The two left legs, the two right legs, and the back are made of individual groups of continuous laminated wooden strips. Near the point where they meet the seat, the main back supports are cut once more, this time at right angles to the lamination, which makes it possible to obtain a bend perpendicular to the bends in the upper part of the back. The thin edges of the laminated strips are covered by a veneer.
Upholstery renewed.

The following considerations are important in establishing the date of the chair: the form and the use of flat laminated strips indicate that it was made before those in the Palais Liechtenstein (1843-1849); after he moved to Vienna in 1842 and until he began work on the Palais Liechtenstein in 1843, Thonet produced chairs of bent wood for the firm of Franz List (Heller, p. 16). Thonet does not seem to have attempted the construction of chairs entirely of bent laminated wooden strips until 1837 (Lauboeck, p. 6). Chairs shown in an early Thonet catalogue or advertisement, (Santoro, fig. 20) under the heading, "...1836-1840...Boppard..." are technically less advanced because their backs are not yet made entirely of continuous laminated strips. A chair in the Technisches Museum, Vienna, (probably Santoro, fig. 21) of the same design as those just mentioned was made in 1839 (Lauboeck, p. 7).

A similar chair in the Museum of the Chair, Holesov, Czechoslovakia (Zák and Suman, p. 6) has been dated about 1835, but no substantiation for the date is given.

Seat Width: 17 3/8" Depth: 19"
Height of seat: 20 1/2" of back: 36 3/8"

lent by The Museum of Modern Art, New York

2 CHAIR MADE FOR THE PALAIS LIECHTENSTEIN, VIENNA, BY THE FIRM OF KARL LEISTLER, 1842-1849

The chair is dated 1842 by the "Fuerstlich Liechtenstein'sche Zentralverwaltung-Bauabteilung."

The chair is shown as a comparison to the much lighter and more delicate chairs made by Thonet, working under Leistler, for the same palace almost at the same time.

The design is probably by the English architect, P. H. Desvignes, who was responsible for the interior decoration of the palace.

All members are of cut and carved wood. The joints have been carefully hidden by the articulation of the carved ornament or by the use of veneers.

This and the two following chairs are still in every-day use in the palace.

Seat Width: 18" Depth: 17"
Height of seat: 18" of back: 34 3/8"

lent by Prince Franz Josef II von Liechtenstein, Vienna, Austria

3 CHAIR MADE FOR THE PALAIS LIECHTENSTEIN, VIENNA, BY MICHAEL THONET, 1843-1849

The chair is dated 1843 by the "Fuerstlich Liechtenstein'sche Zentralverwaltung-Bauabteilung."

The great difference in form between Thonet's earlier work and the Liechtenstein chairs could be interpreted to indicate that the latter were designed by Desvignes. Thonet's later work was never as extremely delicate, a fact, however, which may also be due to his desire to appeal to a broader public after about 1850 (Heller, p. 19).

The chair frame is entirely made of thin laminated wooden strips. The outward bending of the legs is made possible by using strips with a square cross-section; flat strips used in the back are laminated to the square strips used in the legs at both sides of the back. The seat frame is made of five flat strips, the outer, visible one being a veneer which also adds to the strength of the chair. Legs and back are attached to the seat by glue and screws. "Joseph Baum Inventar" is written in ink on the inside of the seat frame.

Seat Width: 16 3/4" Depth: 17"
Height of seat: 18 5/8" of back: 34 1/2"

lent by Prince Franz Josef II von Liechtenstein, Vienna, Austria

4 CHAIR MADE FOR THE PALAIS LIECHTENSTEIN, VIENNA BY MICHAEL THONET, 1843-1849

The chair is dated 1844 by the "Fuerstlich Liechtenstein'sche Zentralverwaltung-Bauabteilung."

This chair is a classic example of the application of laminated wooden strips. The approximately square cross-section of the strips has been fully exploited to obtain, apparently for the first time, a structure which ties all the members of the chair together into a continuous and unified, entirely laminated, system. Continuous laminated wooden strips were never again used as systematically and articulated as clearly in Thonet's later work.

One group of laminated strips runs continuously from the bottom of each leg around a portion of the seat, to the bottom of the next leg, except between the rear legs, where they are replaced by a straight solid member to give additional strength to the back. (In chair 3 the articulation of the seat and legs is very similar, but the strips are not continuous.) Another group of strips runs from the bottom of the rear legs around the top of the back, while a third group runs around the top and sides of the back and the sides and front of the seat.

Each of the three groups of strips is clearly articulated as a separate and continuous element in the total organization of the chair, although on the rear legs the articulation is false due to the conflict between structural necessity and unity of articulation. The carved triangular insets above the legs are a clear articulation of the different structural character of these elements, which serve as stiffeners; they are, indeed, omitted in comparable later designs (exhibition item 15).

Seat Width: 16 5/8" Depth: 17"
Height of seat: 17 5/8" of back: 36"

lent by Prince Franz Josef II von Liechtenstein, Vienna, Austria

5 CHAIR MADE IN VIENNA,
PROBABLY IN THE LATE 1840'S

Form and construction indicate that this may be an experimental model, a first step in the development toward cheaper, mass produced chairs.

The frame of the seat is made of solid pieces of cut and carved wood glued together; each front leg is carved from a single piece of wood; each rear leg appears to be carved from a single piece of wood and is glued to flat laminated wooden strips which form the upper part of the back. The inset of the back is made of flat laminated strips and is attached to the back by countersunk screws covered with plugs. The rear legs are attached to the seat with screws while the front legs are attached by a simple turned joint.

The date of this chair is indicated by the following observations: the seat corners are thickened to provide a firmer joint, a feature also found on the chairs made for the Café Daum (probably 1849); many thin laminations are used, in contrast to the few heavier laminations used in later chairs; (Lauboeck, p. 10); the design of the back is rather awkward compared to the similar models which were finally mass-produced (exhibition items 6 and 9); Thonet apparently worked exclusively for the Palais Liechtenstein until 1846 (Heller, p. 17).

Seat Width: 16 1/2" Depth: 18 1/2"
Height of seat: 16 3/4" of back: 36"

6 CHAIR MADE OR ASSEMBLED IN THE THONET WORKSHOPS IN THE GUMPENDORF DISTRICT OF VIENNA, IN 1849 OR IN THE EARLY 1850'S, CERTAINLY NO LATER THAN 1858.

An unusual example of twisting flat laminated wooden strips so that they can be bent in three dimensions. With the exception of the front legs, which seem to be carved, the chair is made entirely of flat laminated wooden strips. The long continuous strips which form the rear legs and back are twisted so that at the top of the back their flat sides face up while in the legs they face forward.

"Thonet Wien Gumpendorf" is stamped on the bottom of the seat frames. Although Thonet already lived in Gumpendorf before 1849, he did not found a firm bearing his own name there until that year. (Heller, p. 17f). The workshop was closed in May, 1858, when it was replaced by the factory in Korycany, Moravia; by 1857 chair parts made in Korycany were assembled in Gumpendorf (Heller, p. 26). The thickening of the seat corners and the twisting of the laminations are both found in the chairs made for the Café Daum, probably in 1849 (Lauboeck, p. 10; Santoro, fig. 55; see notes on Exhibit 11 for the date of the Café Daum chairs.)

Seat Width: 16 1/2" Depth: 18 1/2"
Height of seat: 16 1/2" of back: 35 3/4"

7 CHAIR FROM THE PALAIS SCHWARZENBERG, PROBABLY MID 1850'S

An example of the transition from the use of laminations to the use of solid bent members. The rear legs and the top of the back are made of a continuous piece of wood; while in the rear legs it is solid, at the top of the back it tapers to a thin strip and is laminated to two other strips. Only three laminations are used in the seat frame, in contrast to five used in the Liechtenstein chairs and in chairs made in 1850 (Heller, p. 19), and six used in the chair of exhibition item 6.

A similar chair is dated 1845 by Zák and Suman, (p. 7) but no substantiation for the date is given.

Similar chairs are in every-day use in the Palais Schwarzenberg.

Seat Width: 17 3/8" Depth: 18 1/4"
Height of seat: 17" of back: 36 1/4"

8 THONET PRODUCTION NUMBER 1
FIRST PRODUCED IN THIS FORM
IN KORYCANY IN THE LATE 1850'S

The design is very similar to that used in the Palais Schwarzenberg.

The production numbers are those used in Thonet sales catalogues; they indicate in which chronological sequence the models were first put into mass-production.

The frames of this and all following chairs were made of solid bent beech wood.

Unless otherwise noted, this and all of the following Thonet chairs exhibited are either stamped or labeled with the firm name on the inside of the seat frame.

Seat Width: 16 3/4" Depth: 18 1/2"
Height of seat: 16 7/8" of back: 35 3/4"

9 THONET PRODUCTION NUMBER 2

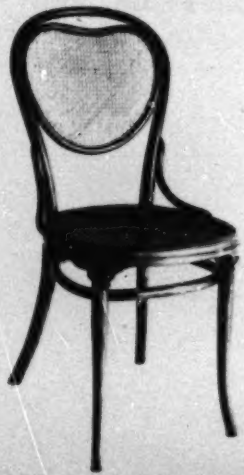
The chair is very similar to the one shown as exhibition item 6, which seems to be an earlier version of this model. The similarities between this chair and exhibition items 5 and 6, as well as the similarities between exhibition items 7 and 8, indicate that once Thonet had resolved the major problems of bending wooden members, his later technical refinements and changes in production methods caused few if any changes in the forms of his chairs. The braces between the seat and back, and the ring between the legs, were no doubt necessitated by heavy wear on the chairs, which were now used by all levels of society.

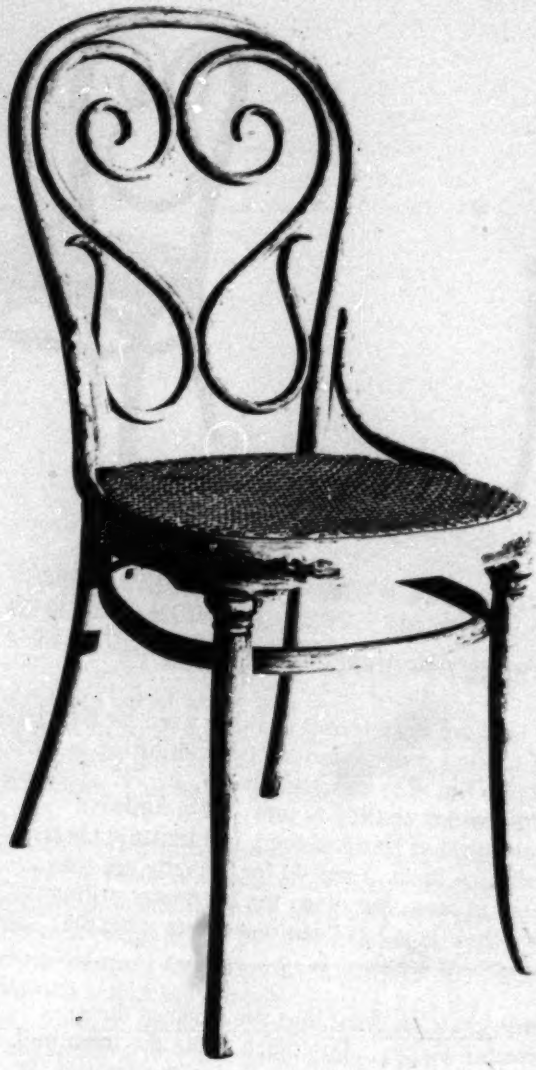
Seat Width: 17" Depth: 18 1/2"
Height of seat: 17" of back: 35 1/2"

10 THONET PRODUCTION NUMBER 3

The inset of the back is very similar to that of the 1851 London Exhibition chairs.

Seat Width: 17 1/4" Depth: 18 1/2"
Height of seat: 16 5/8" of back: 36 1/2"





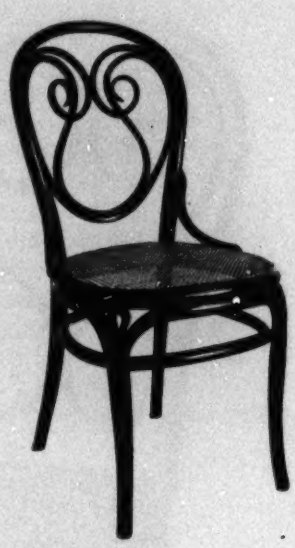
11 THONET PRODUCTION NUMBER 4

The back of this chair is very similar to that used in the chairs made for the Cafe Daum in Vienna, the first public establishment to use Thonet chairs (Santoro, fig. 55 shows an example owned by the brothers Thonet-Frankenberg in Hessen.) The Thonet chairs were ideally suited for use in coffee houses by their light weight and sturdy construction.

The date of the Café Daum chairs is important for establishing the chronology of Thonet's technical development. Lauboeck, (p. 10) clearly states that the Daum chairs were made in 1857 of twisted laminations. On the other hand, H. Heller, (p. 20), implies that the Daum chairs were made about 1849, a date which is convincing if one accepts his statement that they constituted Thonet's first commission in Vienna after he had founded his own firm. Heller's date is supported by Lauboeck's own account (p. 12f) of the development of the final method of bending solid wood before the construction of the factory in Korycany in 1856. Lamination was certainly still used in 1852, when it was mentioned in Thonet's license document (Heller p. 21).

Form and construction of the Daum chairs are closer to those of the later, mass produced chairs than to those of the chairs sent by Thonet to the London International Exhibition in 1851; the latter are more similar to the chairs made for the Palais Liechtenstein (see notes on exhibition item 12). If the Daum chairs were made in 1849, then the more elegant, conservative form of the London chairs must be explained by the fact that they were made exclusively as luxury items not meant for future mass-production; Thonet did not send chairs made for a broader public to a major exhibition until 1854 (Heller p. 23).

Seat Width: 16 3/4" Depth: 18 1/4"
Height of seat: 16 1/2" of back: 36 3/4"



12 THONET PRODUCTION NUMBER 10

Seat Width: 16 1/4" Depth: 16 1/2"
Height of seat: 18 1/2" of back: 37"

13 THONET PRODUCTION NUMBER 11

The circular seat frame was first used in 1859; most models were produced both with a nearly oval and a circular seat thereafter, and in a variety of finishes.

Seat Width: 16 1/2" Depth: 16 3/4"
Height of seat: 18 3/8" of back: 35 7/8"

14 THONET PRODUCTION NUMBER 13

The legs are reminiscent of those used for the chairs sent to the London International Exhibition in 1851 (Santoro fig. 43; Zák and Suman, p. 7). The legs of the London chairs, in turn, are a further development of those of the Liechtenstein chairs, (exhibition items 3 and 4) for not only are they similar in form, but also, the triangular stiffening above their legs has been reduced to a simple, open loop of bent wood.

In this chair the front legs are made of three laminated pieces. One piece forms the inner half of both legs and the lower edge of the front of the seat frame; two other pieces form the outer halves of both legs, run around the lower edges of the sides of the seat frame, and meet at the rear of the chair. The design of this chair seems to have been discontinued relatively early, perhaps because of its complicated construction.

Seat Width: 16 7/8" Depth: 17 1/8"
Height of seat: 18 1/4" of back: 36 1/2"

15 THONET PRODUCTION NUMBER 14
KORCANY, MORAVIA, 1859. THONET'S MOST SUCCESSFUL MODEL.

The elements out of which this chair is composed are reduced to an absolute minimum in number and design, thereby anticipating the 20th century axiom, "Less is more," by half a century.

The accompanying reduction in price brought this chair into the financial reach of millions, many of whom would probably not have been able to afford a more expensive chair. In the 1860's it was sold in Austria-Hungary for 3 Gulden (Lauboeck, p. 28), a sum which would have bought about 3 1/3 lbs. of beef, 3 dozen eggs, or 3 quarts of inexpensive wine; at the same time a laborer working in a Thonet factory received from 2 to 12 Gulden per week, depending upon the degree of skill and type of labor. (Lauboeck p. 27) In the 1870's 1200 chairs of this model were sold per day; in 1891 7,276,000 had been sold (Lauboeck, p. 28), and about 1920 the total production of chairs of this type was estimated at 30,000,000 (Heller, p. 29).

Seat Width: 16 3/8" Depth: 16 3/8"
Height of seat: 18 1/2" of back: 35 1/2

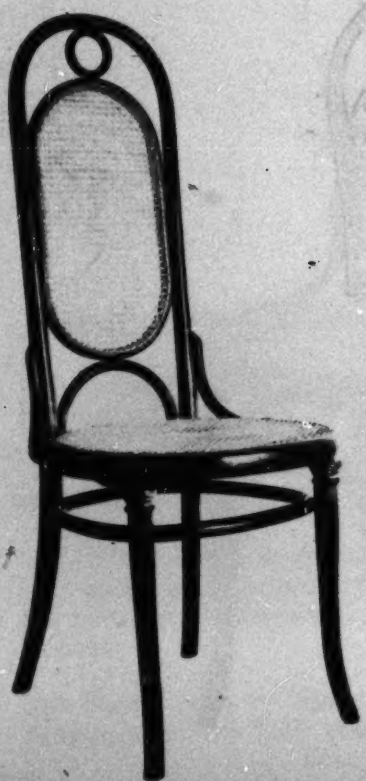
16 THONET PRODUCTION NUMBER 17

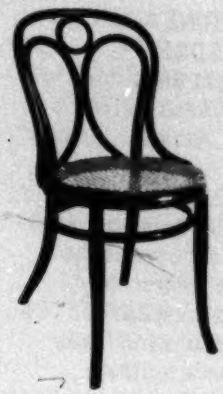
Seat Width: 17 3/4" Depth: 17 5/8"
Height of seat: 18 3/8" of back: 45 1/4"

17 THONET PRODUCTION NUMBER 18, 1876.

The ring which braces the legs is shaped so that it gives more support than the traditional, circular ring. In the late 19th century four types of leg braces were offered Thonet customers, but the circular ring was usually chosen.

Seat Width: 16 1/2" Depth: 16 3/8"
Height of seat: 18 1/2" of back: 35 7/8"

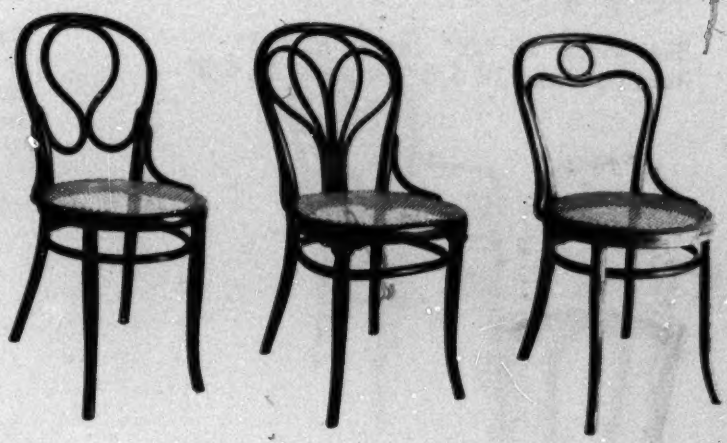




18 THONET PRODUCTION NUMBER 19

Here the braces between the seat and back have been structurally integrated to achieve a more unified composition. The braces are a continuation of the top of the back while the inset of the back is a continuation of the rear legs.

Seat Width: 16 5/8" Depth: 16 5/8"
Height of seat: 18 3/4" of back: 33 3/4"



19 THONET PRODUCTION NUMBER 20

Seat Width: 16 1/2" Depth: 16 1/4"
Height of seat: 18 3/4" of back: 35"

20 THONET PRODUCTION NUMBER 25

The fan-shaped inset of the back is reminiscent of late 18th century English chair forms.

Seat Width: 17" Depth: 17 1/2"
Height of seat: 18 5/8" of back: 35 5/8"

21 THONET PRODUCTION NUMBER 31

Seat Width: 16 5/8" Depth: 16 1/2"
Height of seat: 18 1/8" of back: 34"

22 THONET PRODUCTION NUMBER 56

Put into mass-production about 1888. Most members of the chair are of bent wood, but the top and sides of the back are joined together from three separate pieces. This measure, so contrary to the methods developed by Michael Thonet decades earlier, was probably employed to reduce the length of the required pieces of wood. The greatest production problem in the late 19th century, a period of enormous expansion for the bent wood industry, was the procurement of adequate supplies of timber; often it had to be brought by rail from considerable distances once forests near the factories had been exhausted.

Seat Width: 15 7/8" Depth: 16 1/2"
Height of seat: 18 3/8" of back: 35 5/8"

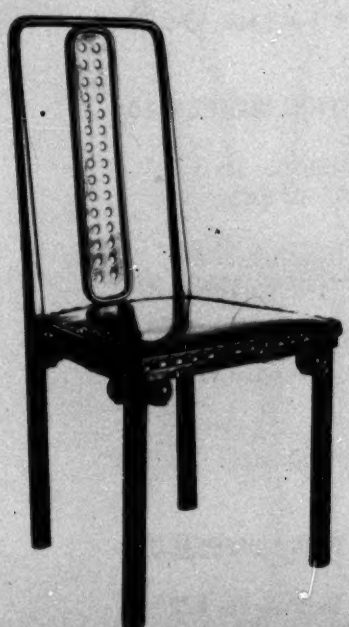
23 CHAIR MANUFACTURED BY THONET BROTHERS FOR THE PURKERSDORF SANATORIUM, VIENNA, 1903-1906

Designed by Josef Hoffman.

The frame is of bent beechwood, and differs from that of other Thonet chairs of the period primarily in details and proportions. The carved spheres at the tops of the legs serve to reinforce the joints; they replace the standard Thonet braces in comparable positions on other chairs. The chairs, of which only 80 were made, were commissioned for a building now considered a landmark in the history of twentieth century architecture.

Upholstery and leather covering renewed.

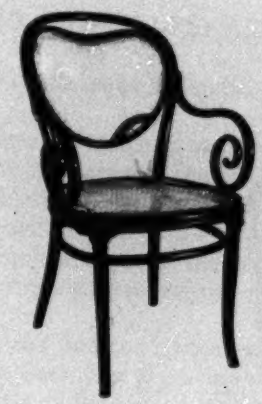
Seat Width: 17 1/2" Depth: 18 1/2"
Height of seat: 17 3/4" of back: 39"



24 THONET ARMCHAIR NUMBER 3

For each chair there was a corresponding armchair of a similar design which carried the same catalogue number. (compare exhibition item 10)

Seat Width: 20 5/8" Depth: 19 1/2"
Height of seat: 18 5/8" of back: 37 3/4"



25 THONET ARMCHAIR NUMBER 4, LATE 1850'S

An example of the last stages in the transition from lamination to the bending of solid wood. With the exception of the laminated inset of the back, all members are of solid bent wood. The armrests are screwed only to the seat frame and are attached to the back of the chair by metal hooks, apparently to simplify assembly.

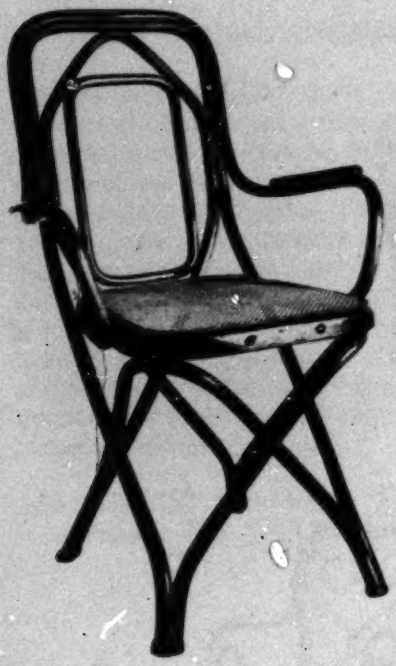
This chair, like most other chairs made partly or entirely of laminated strips, has no Thonet label.

Seat Width: 20" Depth: 19 1/2"
Height of seat: 18 1/4" of back 38 1/2"

26 THONET ARMCHAIR NUMBER 18

A type known as a "half-armchair" because of its somewhat smaller size and simpler arms.

Seat Width: 18" Depth: 17 3/4"
Height of seat: 17 3/4" of back: 34 3/4"



27 THONET ARMCHAIR NUMBER 51

The form of the chair is largely dependent upon an ingenious structural system which fully exploits the unique properties of bent wood.

The basic supporting elements are composed of four pieces: two begin at the bottom of the front legs, cross at the front of the chair, support the front corners of the seat, and end at the bottom of the rear legs, diagonally opposite their starting point; a third piece begins at the base of the front legs and forms a rectangular "U" around the top of the back; the fourth begins at the base of the rear legs and forms a diamond-shaped, looped inset in the back. Each of the other three elements of the chair is composed of a single piece of bent wood, and each is an essential part of the total structural system. The rectangular seat stabilizes the legs and gives the system rigidity; the arms tie the sides of the seat to the sides and top of the back, giving additional rigidity through their linear continuity; the rectangular inset of the back adds strength to the back at the point where it is most needed. Joints have been entirely eliminated; only screws are used to hold the bent elements together.

Seat Width: 16 1/8" Depth: 15 7/8"
Height of seat: 18 1/4" of back: 36 1/4"

28 THONET DRESSING-TABLE ARMCHAIR

In contrast to the standard arm chairs, the arms and the top of the back are made of a single piece of bent wood. The arms are given a more dynamic form by attaching them to the bottom, rather than to the sides or top of the seat frame. The form of this chair may have led to the simpler chair shown as exhibition item 29.

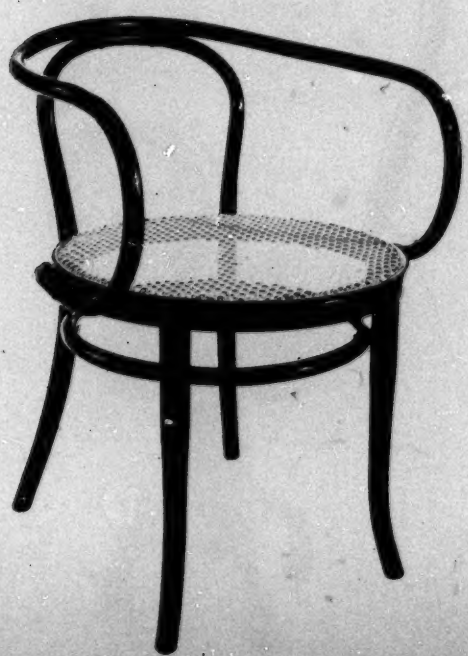
Seat Width: 19 3/4" Depth: 19"
Height of seat: 17 3/4" of back: 32 1/2"

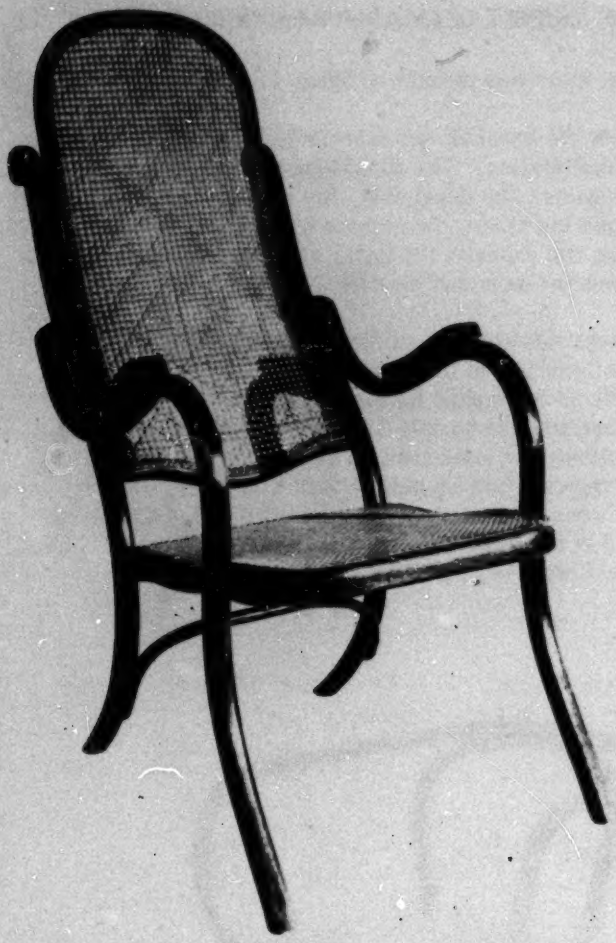
29 THONET DESK ARMCHAIR NUMBER 9

Put into mass production about 1870.

Here the armchair has reached its "classic" simplification. The design is reduced to six elements: the round seat, the two front legs, the round leg brace, the member which forms the rear legs and supports the back, and the member which forms the arms and top of the back.

It was this chair which was frequently used by Le Corbusier in his interiors. Le Corbusier himself tells us the reason for his choice: "We have introduced the humble Thonet chair of steamed wood, certainly the most common as well as the least costly of chairs. And we believe that this chair, whose millions of representatives are used on the Continent and in the two Americas, possesses nobility." (Le Corbusier, p. 145)





30 THONET FIREPLACE ARMCHAIR NUMBER 1

All of the functional elements of the chair have been molded into a single continuous structural system, the direct consequence of the logical use of bentwood. The four legs, the two arms, and the supports of the back are composed of only four continuous bent members, two on each side. The panels which form the seat and back are equally important for the function and the structure of the chair. Only screws are used to attach the elements to each other. The curved form of the legs makes the chair particularly resilient and accordingly very comfortable.

This chair and the following one are antecedents of many 20th century designs, usually executed in metal, the forms of which depend upon a similar linear structural continuity.

Seat Width: 18 1/8" Depth: 19 1/8"
Height of seat: 16 5/8" of back: 44 1/4"

31 THONET FOLDING ARMCHAIR

The same principles utilized in the preceding example are exploited here to obtain even greater flexibility. The rear legs and the front and sides of the seat frame are made of a single piece of bent wood. The arms are hinged in the center.

Seat Width: 18 1/8" Depth: 19 1/8"
Height of seat: 16 5/8" of back: 44 1/4"

32 THONET REVOLVING AND TILTING ARMCHAIR NUMBER 1

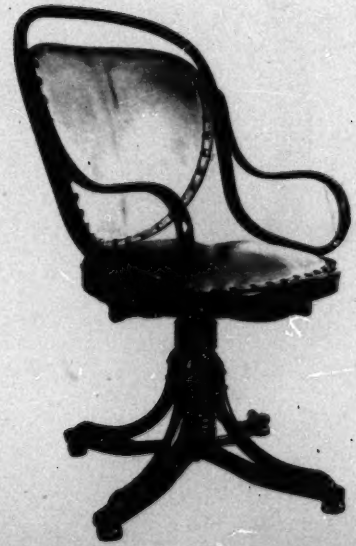
The arms are used to support the back because the lack of rear legs does not permit the usual solution. A potential design problem has thereby been transformed into a particularly elegant design feature.

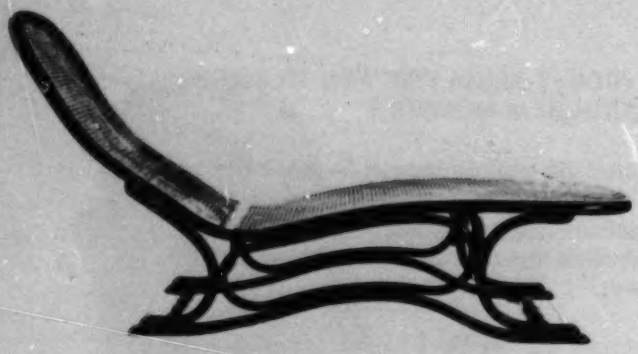
Upholstery and leather covering renewed. The place where the firm label is usually applied is hidden by the upholstery.

Seat Width: 21" Depth: 20 1/4"
Height of seat: subtended; 17 5/8"
extended; 27"
Height of back: subtended; 39 1/4"
extended; 48 5/8"

33 THONET REVOLVING STOOL NUMBER 1

Seat Width: 14 3/4" Depth: 14 3/4"
Height of seat: subtended; 17"
extended; 26 3/4"
Height of back: subtended; 30 1/8"
extended; 39 7/8"





34 THONET CHAISE - LONGUE

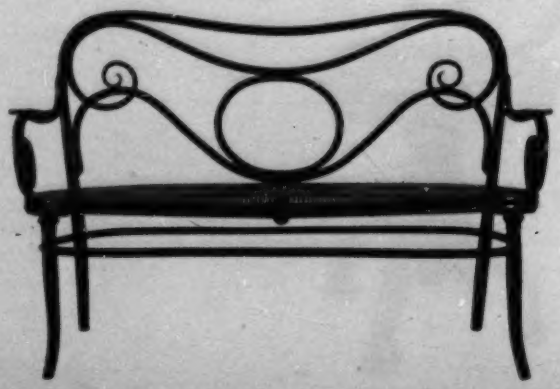
Here the specific properties of bent wood are ingeniously exploited to produce one of the simplest and most elegant Thonet designs. The supporting structure is composed of circular bent wood elements organised in a manner which provides great strength as well as comfortable resilience. The lower edge of the support is reminiscent of the curved bottom member of a rocking chair, turned up-side down.

Seat Width: 21" Depth: 72"
Height of seat: 15 1/4" of back: 35 1/2"

35 THONET BENCH NUMBER 8

The firm label is illegible.

Seat Width: 55 7/8" Depth: 18 3/4"
Height of seat: 18 1/8" of mid-back: 37 3/8"



36 THONET ROCKING CHAIR NUMBER 1, PUT INTO MASS-PRODUCTION IN KORYCANY, 1860

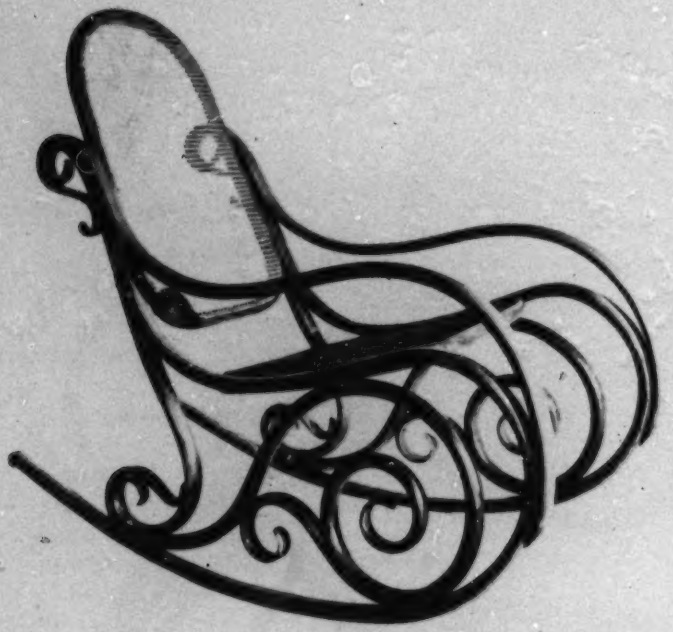
Almost immediately after he had finally perfected his technique, Michael Thonet must have realized that bent wood was ideally suited to the production of rocking chairs. Although rocking chairs were already common at the time in the United States, they were almost entirely unknown in Central Europe; the ones which were known were made of iron and were accordingly heavy as well as expensive. Consumer demand was small at first but grew steadily until the estimated yearly production was 20,000 in the 1890's (Thonet alone) and 100,000 in the 1920's (all producers) (Lauboeck, p. 28; Heller, p. 33).

Although all of the members are of solid bent wood, lamination is still used to form most of the connections.

None of the rocking chairs exhibited except the last (exhibition item 41) bear labels or stamps bearing the firm's name.

The leather is renewed.

Seat Width: 19 1/4" Depth: 19 1/4"
Height of back at rest: 39 1/4"



37 ROCKING CHAIR
LATE 1850'S OR EARLY 1860'S

Although this design does not appear in the Thonet catalogues, its similarity to Thonet Rocking Chair Number 1 indicates that it was probably made by Thonet, perhaps as an early experimental model which was never mass-produced. The decorative elaboration of the ends of members, which is reduced in Rocking Chair Number 1 and eliminated in later models, could lead to the conclusion that this chair was made before 1860. However, there are fewer laminated connections in this chair than in Rocking Chair Number 1, an observation which could lead to an attribution after 1860.

Seat Width: 17 3/4" Depth: 18 1/8"
Height of back at rest: 38"

38 THONET ROCKING CHAIR NUMBER 4

Spirals and lamination have been eliminated; only screwed connections are used. However, the screwed connection between the back and the member which joins the back with the bottom rail is still very reminiscent of the laminated connection in the same position in the two previous examples.

Seat Width: 16 3/4" Depth: 18 3/4"
Height of back at rest: 38"

39 THONET ROCKING CHAIR

Although the member between the back and the rear of the bottom rail has been omitted, lamination is used in one of the scrolls; this chair therefore has some features which are more advanced, and other features which are less advanced than in the previous example.

Seat Width: 19" Depth: 19"
Height of back at rest: 42 7/8"

40 THONET ROCKING CHAIR FOR CHILDREN NUMBER 10

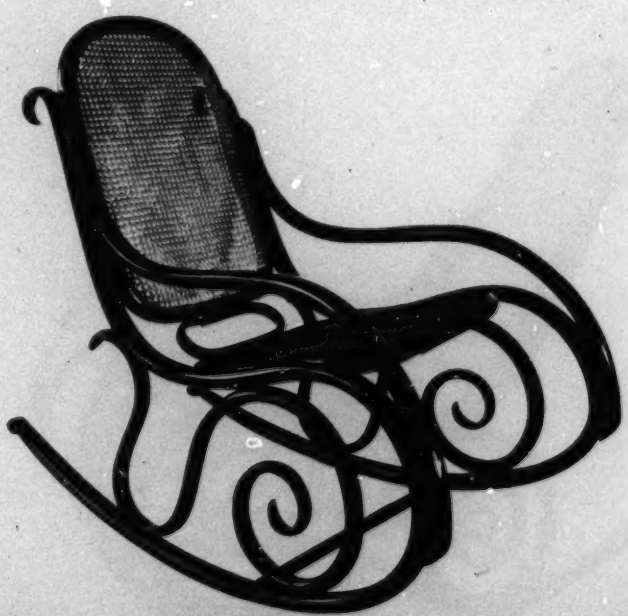
This chair, perhaps more than any other in the exhibition, sums up the logic, clarity and simplicity which characterize Thonet's forms at their best. The form of each member clearly reflects the member's structural relevance, and the structure, in turn, fully utilizes the linear continuity made possible by using bent wood. Each side of the chair is composed of only three pieces: one long, continuous member forms the bottom rail and the major supporting element for the seat and back; a second member acts as a resilient, spring-like web, resembling the webbing of a truss, between the lower rail and seat; the third member forms the arm and creates a resilient structural tie between the front of the lower rail and the back of the chair.

The logical development which is evident in the exhibited rocking chairs may be interpreted to imply that they were all created by a single designer, perhaps Michael Thonet. If so, this chair must be dated before 1871, the year of Thonet's death. Certainly a period of 10 years would have provided sufficient time to culminate the development. Similarities in the structural and formal concepts used in this chair, in the desk chair of 1870 (exhibition item 29), in the Liechtenstein chair (exhibition item 4), lend credibility to the attribution of these early rocking chairs to Michael Thonet.

Moreover, not only underlying structural and formal concepts but also decorative details are comparable in this rocking chair, the "Fireplace Armchair" (exhibition item 30), and the "Chaise Longue" (exhibition item 34), implying that the two latter pieces may also be the products of Michael Thonet's last years.

Seat Width: 16 1/2" Depth: 16 1/4"

Height of back at rest: 33"



41 ROCKING CHAIR

The structural framework exhibits complete virtuosity in the use of bent wood technology. It is composed of only four pieces: one piece on each side forms the lower rail and loops around to form the arm; a third piece is connected to the ends of the lower rails and forms an inverted "U" around the top of the back; the fourth piece supports the back of the seat and acts as a brace between the two sides of the chair. The front of the seat rests on top of the looped rails, thereby making use of the fact that the wood forms two planes where it overlaps.

The geometric ornamentation of the back may probably be attributed to the end of the 19th or the early 20th century.

Seat Width: 18 1/2" Depth: 17 7/8"
Height of back at rest: 36 7/8"

CONCLUSION

An exhibition usually serves the purpose of focusing attention. By bringing objects together and separating them from a larger context their individual characteristics are clarified, compared, and related within the framework of the chosen theme. Most exhibitions may be compared to looking through a telescope, enlarging and clarifying one area to the exclusion of everything else.

While this exhibition concentrates upon a certain type of object, its purpose may, perhaps, better be compared to looking at that object through both ends of the telescope at the same time. We have attempted to enlarge and clarify a single area; but we have also attempted to show that area as a small element in a much larger configuration of relationships. We have attempted to concentrate upon the forms of the Thonet chairs in the hope of demonstrating their visual distinction; but we have also attempted to indicate the process which led to the creation of these forms in the hope of contributing to a better understanding not only of their forms in particular but also of the form-giving process in general.

In doing so it was necessary to approach the forms of the Thonet chairs from many different points of view, thereby demonstrating the enormous variety of factors influencing the form of an object which seems on the surface to be so simple. For example, it would be impossible to understand how Thonet achieved his forms without at least a rudimentary understanding of the technical problems which he faced; these, in turn, would be impossible to understand without some

knowledge of the composition and structural behavior of wood. On the other hand, it seems unlikely that Thonet would even have experimented with the bending of wood if chairs with curved forms had not been in vogue in the early 19th century; the forms of these chairs, in turn, may be derived from chair forms of the 18th century.

As work progressed on the exhibition it became increasingly clear that reliable scholarship concerning many of the problems was either lacking or insufficient. Probably it would have been easier to obtain reliable information about a classical Greek artifact, its date, its stylistic derivation, its method of production, its maker, what he may have known or thought, how he may have been influenced by social, cultural, political, or economic circumstances. While the reasons for concentrating upon periods of the more distant past are many, surely there is also justification for taking a close and serious look at objects which have such an immediate bearing upon our own time and the forms we see around us. A very striking indication of the influence the forms of the Thonet chairs have had on those of the 20th century is perhaps the fact that often they are mistakenly thought to be products of the Art Nouveau. Their influence is illustrated not only in their use by architects like Loos and Corbusier, but also in the similarity between their forms and those of chairs designed by outstanding designers like Marcel Breuer, Mart Stam, Corbusier, and Mies van der Rohe, working in association with the Thonet Brothers firm. The influence of the Thonet chair on 20th century designers makes it one of the very few examples of a form which was able to bridge the gap between the forms of the 18th and those of the 20th century.

While we may be able to derive the use of curved motifs in Michael Thonet's work from contemporaneous German chairs, and, ultimately from 18th century French forms, the existance of those forms need not have led Thonet to precisely those curved shapes which he used; nor was there an inherent necessity that forced Thonet to avail himself of the latent possibility

of bending wood by laminating thin wooden strips. It may be possible to point out that if a course of events or set of conditions had differed, then the Thonet chair would have been different or perhaps would not even have been developed; but that does not constitute a full explanation of why the chairs have their specific forms. We may at best give a minutely accurate description of a great many circumstances or conditions which historically preceded Thonet's chairs when we attempt to understand their forms as products of a process. These circumstances and conditions, rather than constituting a series of explanations, provide us with a set of preconditions for the creation of the chairs.

The clarification of the preconditions which were necessary before a form could be created seems to me to be particularly important in an exhibition which is part of an educational program. While the university can never be certain of leading its students to a desired goal, it can provide preconditions which will at least make it possible to reach that goal.

If we accept as a desirable goal for designers of the future the ability to design objects as practical and beautiful as the Thonet chairs, then we must ask, what, in addition to Thonet's inborn talent, are the "teachable" preconditions that may be distilled out of the total picture which we have presented? To me they appear to be the following: Thonet's intimate familiarity with his tools and his materials; his ability to recognize problems or inadequacies in the area of his own competence; his attitude of open-minded, well-reasoned experimentation with new methods and new forms. Such preconditions could, of course, also apply to a physicist, a writer, or a historian: his tools and materials are different; his problems differ; his new methods and new forms will be different. Yet, surprising as it may appear to many visitors of this exhibition, much of the creative performance at a university - and elsewhere - is based on the same preconditions which governed the achievement of Michael Thonet.

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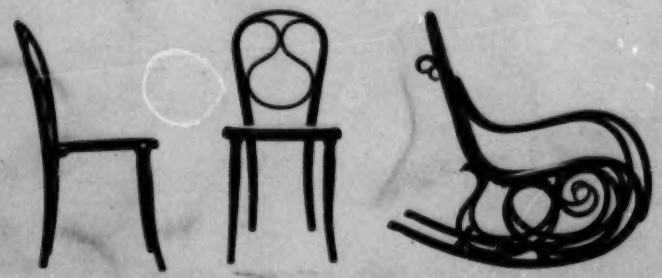
TH  T

FORM FROM PROCESS

THONET

carpenter center for the visual arts harvard university